

**NASA Risk Management Conference 2005**  
**(RMC VI)**  
*Risk Management: Enabling the New Age of Exploration*

***Monday, December 5***

**Registration** – North Registration Desk

5:00-8:00 p.m.

***Tuesday December 6 (Day 1)***

**Registration** – North Registration Desk

7:00-8:00

**Exhibits & Demonstrations**

Coronado Ballroom K

**Welcome & Announcements**

Coronado Ballroom L

8:00-8:15

*John E. Tinsley  
Director, Mission Support Division  
Office of Safety and Mission Assurance, HQ*

*Conference Orientation  
Robert Navarro  
Sr. Risk Manager, Risk Management Corporation*

**Keynote & Special Topics**

**Risk Management for NASA Programs:  
Are We Ready for Exploration?**

8:15-9:15

*Bryan O'Connor  
Chief Safety & Mission Assurance Officer, OSMA, HQ  
Former Astronaut*

**Risk-Informed Decision Making:  
Successes and Current Challenges**

9:15-10:15

*George Apostolakis, PhD  
Professor of Nuclear Science and Engineering  
and of Engineering Systems, MIT*

**BREAK - View Exhibits & Demonstrations**

Coronado Ballroom K

10:15-10:45

**Special Topics (Continued)**

Moderator: *Robert Navarro  
Risk Management Corporation*

**The Human System: Enabling Successful Human Exploration  
and Mitigating Risk**

10:45-11:45

*Bonnie Dunbar, PhD  
Astronaut (Retired) & President and CEO, The Museum of Flight*

**LUNCH** - Coronado Ballroom K 11:45-1:00

**The Future of Engineering and Risk Management** 12:40-1:00  
*Chris Scolese*  
*NASA Chief Engineer, HQ*

Reconvene in Coronado Ballroom L

**Topic Area 1: NASA Transformation and Engineering Authority**

Moderator: *Bonnie Dunbar, PhD*  
*Astronaut (Retired) & President and CEO, The Museum of Flight*

**The Future of Engineering and Risk Management (Continued)** 1:00-1:20  
*Chris Scolese*  
*NASA Chief Engineer, HQ*

**Warrant Holder Implementation / Engineering Authority:  
A Center Perspective**

**Back to the Future: JSC Engineering Excellence  
to Meet the Challenges of Human Space Flight** 1:20-2:10  
*Mike Conley*  
*ISS System Warrant Holder & ISS Chief Engineer, JSC*

**Engineering Authority: Implementation at Goddard** 2:10-3:00  
*Richard Day*  
*Director, Office of Mission Success, GSFC*

**BREAK - View Exhibits & Demonstrations** 3:00-3:30  
Coronado Ballroom K

**Expert Panel:** 3:30-5:30  
**NASA Transformation - How is it Working?**

**Chair:** *Jeevan Perera, PhD/JD*  
*Risk Manager, Crew Exploration Vehicle, JSC*

**Panel Members:**

- **Chris Scolese**  
*Chief Engineer, HQ*
- **Steve Poulos**  
*Orbiter Vehicle Manager, JSC*
- **Mike Conley**  
*ISS System Warrant Holder  
& ISS Chief Engineer, JSC*
- **Wayne Frazier**  
*OSMA/NESC Liaison, HQ*
- **Mark Saunders**  
*Director, IPAO, HQ*
- **Dave Graham**  
*PA&E, HQ*
- **John Tinsley**  
*OSMA, HQ*

**Daily Wrap-up**  
*John E. Tinsley*

## **Wednesday December 7 (Day 2)**

### **Welcome & Highlights**

*John E. Tinsley*

8:00-8:15

### **Keynote**

#### **Risk Management: An Astronaut's Perspective**

*James M. Kelly, Astronaut (Colonel, USAF)*

*Pilot STS-114, Return-to-Flight Mission*

8:15-9:15

### **Topic Area 2: SSP/ISS Accomplishments and Challenges for Implementing NASA's Changing and Emerging Strategies**

Moderator: *Michael Lutomski*

*ISS Risk Manager, JSC*

#### **A. Implementation of the Agency Strategies to Support Exploration**

*William H. Gerstenmaier*

*Associate Administrator for Space Operations, HQ*

9:15-10:15

### **BREAK & View Exhibits & Demonstrations**

Coronado Ballroom K

10:15-10:45

#### **B. Managing Space Shuttle Program Risk For Return to Flight:**

##### **Why Does Risk Management Fail?**

*N. Wayne Hale*

*Manager, Space Shuttle Program, JSC*

10:45-11:45

### **LUNCH - Coronado Ballroom K**

11:45-1:00

#### **The New Role of Marshall Space Flight Center in Exploration**

*David A. King*

*Center Director, MSFC*

12:40-1:00

Reconvene in Coronado Ballroom L

### **KEYNOTE: NASA Associate Administrator**

#### **The 4<sup>th</sup> Element of Risk**

*Rex Geveden, NASA Associate Administrator*

1:00-2:00

### **Topic Area 2 (Continued)**

#### **C. Risk Analysis: Contributions to Mission Success**

##### **Implementation of Risk-Informed Decision Making at NASA**

*Michael Stamatelatos, PhD*

*OSMA, HQ*

2:00-2:45

##### **Role of System Safety in Risk-Informed Decision Making**

*Homayoon Dezfali, PhD*

*OSMA, HQ*

2:45-3:30

### **Daily Wrap-up**

*John E. Tinsley*

**BREAK - View Exhibits & Demonstrations** 3:30-3:45  
Coronado Ballroom K

**Concurrent Tutorials & Breakout Sessions**

**Tutorials:**

**Session A:** *Durango 1*  
**Part I - Continuous Risk Management (CRM):** 3:45-5:45  
**Fundamentals**  
*Charlie Cockrell & Bob Wingard*  
*Risk Management Corporation*

**Session B:** *Durango 2*  
**Active Risk Manager (ARM):** 3:45-5:45  
**ESMD Implementation**  
*Phil Napala, HQ*  
*Karl Pringle & Lita Cuen*  
*Strategic Thought LLP*

**Session C:** *Room M*  
**Exploration Systems Cost Risk and Beyond** 3:45-5:45  
*Dave Graham*  
*Program Analysis & Evaluation, HQ*

**Breakout Sessions:**

**Session D:** *Room Q*  
**International Advances in Risk Management** 3:45-5:45  
**Lead:** *Christian Preyssl, European Space Agency (ESA)*

**Risk Management Process at JAXA** 3:45-4:25  
*Tsutomu Fukatsu*  
*Manager, Systems Safety and Mission Assurance*  
*Japan Aerospace Exploration Agency (JAXA)*

**Risk Management at CSA – An Overview** 4:25-5:05  
*Alain Laferriere*  
*Hardware Manager for Safety & Mission Assurance*  
*Canadian Space Agency*

**Risk Management at the European Space Agency** 5:05-5:45  
*Christian Preyssl, PhD*  
*Safety & Risk Management, ESTEC/ESA*

**Session E:** *Rooms N & P*  
**Software Risk Approaches - Panel** 3:45-5:45  
**Lead:** *Martha Wetherholt, HQ*

- **Software Risk Approaches: An Institutional Perspective**  
*John Kelly, PhD*  
*Program Executive for Software Engineering, HQ CEO*
- **Software Risk Management Marshall Space Flight Center**  
*Robert T. Crumbley*  
*Software Engineering Discipline Technical Warrant Holder*  
*& Manager, Instrument & Payload Systems Department, MSFC*

- **Software Risk Triage: Zeroing In On One's Problems**  
*Martin Feather, PhD*  
*Principal Information Systems & Computer Science, JPL*
- **IV&V and Software Risk Management**  
*Kenneth Costello*  
*Chief Engineer IV&V, GSFC*
- **So What? How Cigital Approaches Risk Management**  
*Jeff Payne*  
*CEO, Cigital Inc.*

**Session F: Room R**

**Research Advances & Applications in Risk Management**

3:45-5:45

**Lead:** *Francesca Barrientos, PhD, ARC*

**Risk Management During Design**

*Leila Meshkat, PhD*  
*Mission Systems Concepts Section, JPL*

3:45-4:25

**Goals and Reality of Risk Management:  
Lessons Learned from Space Program Execution**

*Sergio Guarro, PhD*  
*The Aerospace Corporation*

4:25-5:05

**Systems Design & Integrated System  
Health Management (ISHM) Technologies**

*Francesca Barrientos, PhD*  
*Complex Systems Division, ARC*

5:05-5:45

**Session G: Room S**

**Human Error and Risk Management**

3:45-5:45

**Lead:** *Faith Chandler, HQ*

**Juxtaposition of Human Reliability  
and Human Performance**

*Harold S. Blackman, PhD*  
*Deputy Associate Laboratory Director*  
*Science and Technology Division*  
*Idaho National Laboratory*

3:50-4:15

**Other People's Problems: Estimating the Risk of  
Human Organ Transplantation Miss-Match  
(Duke-like) Events**

*Richard I. Cook, MD*  
*Associate Professor, Department of Anesthesia & Critical Care*  
*Director, Cognitive Technologies Laboratory*  
*Director, Medical Event Data Collection and*  
*Analysis System (MEDCAS)*  
*University of Chicago*

4:15-4:40

**Human Reliability Analysis Methods for Space Safety**

*Ronald Laurids Boring, PhD*  
*Senior Scientist*  
*Human Factors, Instrumentation and Control Systems*  
*Idaho National Laboratory*

4:40-5:05

<b>Prioritizing Human Interface Design Issues For Range Safety Systems using Human Factors Process FMEA</b> <i>Dave Dunkle Human Factors Engineer ITT Industries</i>	5:05-5:30
<b>MIDAS Video &amp; Wrap-Up</b> <i>Faith Chandler, HQ</i>	5:30-5:45

## **Thursday December 8 (Day 3)**

<b>Welcome &amp; Remarks</b> <i>John E. Tinsley</i>	8:00-8:15
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<b>Keynote</b> <b>NASA's Exploration Architecture</b> <i>Douglas R. Cooke Deputy Associate Administrator for Exploration Systems Mission Directorate (ESMD)</i>	8:15-9:15
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### **Topic Area 3: Exploration Missions - Continuing the Vision for Integrating Risk Management**

**A. Risk Management in Exploration**  
Moderator: *Anngienetta R. Johnson, DSc  
Office of Education, HQ*

<b>Crew Exploration Vehicle (CEV) Project Overview &amp; Objectives</b> <i>Roselle Hanson, Deputy Project Manager (Acting) CEV Project, JSC</i> <b>Implementation of Risk Management in NASA's CEV Project Office</b> <i>Jeevan S. Perera, PhD, JD Risk Manager, CEV Project, JSC</i>	9:15-10:00
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<b>BREAK - View Exhibits &amp; Demonstrations</b> Coronado Ballroom K	10:00-10:15
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<b>NASA Exploration Safety Study</b> <i>Joseph R. Fragola Vice President, Valador, Inc.</i>	10:15-11:15
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<b>A Risk Manager's Perspective: Lessons Learned for Future Exploration Systems</b> <i>John Turner, PhD Space Shuttle Program Risk Manager, JSC</i>	11:15-12:00
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**LUNCH** - Coronado Ballroom K 12:00-1:00

**Exploration Challenges for Industry**

*Frank Culbertson, Jr.  
General Manager, Sr. Vice President  
Space, Earth, and Aviation Sciences Business Unit  
Science Applications International Corp.  
Astronaut (Retired)*

12:40-1:00

Reconvene in Coronado Ballroom L

**Topic Area 3 (Continued)**

**B. Consideration of Risk and Risk Management  
in Deep Space Programs and Projects**

Moderator: *James R. Rose, PhD  
Principal, Office of Safety & Mission Success, JPL*

**Risk Management on the Mars Reconnaissance Orbiter  
(MRO) Project**

*Jim Graf, Project Manager, JPL  
Phil Barela, Mission Assurance/ Risk Manager, JPL*

1:00-1:40

**The Success of Deep Impact Mission:  
A Study of Risk Management Processes**

*Rick Grammier, Project Manager, JPL*

1:40-2:20

**Mars Exploration Rover (MER)  
Operations Phase Real-Time Risk Management**

*Jim Erickson, Project Manager, JPL  
Steve Squyres, PhD (video)  
Principal Investigator, Cornell University*

2:20-3:00

**Concluding Remarks & Acknowledgements**

*John Tinsley*

**BREAK**

3:15-3:30

**Concurrent Tutorials & Breakout Sessions**

**Tutorials:**

**Session A: Durango 1  
Part II - Continuous Risk Management (CRM):  
Applications & Case Study**

*Charlie Cockrell & Bob Wingard  
Risk Management Corporation*

3:30-5:00

*James La, Louis Barbieri  
Space Science Missions Operation, GSFC*

**Session B: Durango 2  
The Powers of Fault Tree Analysis**

*Bill Vesely, PhD  
OSMA, HQ*

3:30-5:00

## **Breakout Sessions:**

### **Session C:** *Rooms M & N*

#### **Risk Management Best Practices**

3:30-5:00

**Lead:** *Dave Lengyel, HQ*

#### **IPAO Lessons Learned**

3:30-3:55

*Mike Canga, LaRC*

#### **NESC Perspective**

3:55-4:20

*Daniel Yuchnovicz, LaRC*

#### **Risk Management Best Practices and Lessons to be Learned**

4:20-4:45

*Harold Taylor*

*ARES Corporation, JSC*

#### **Discussion Q&A**

4:45-5:00

### **Session D:** *Room P*

#### **Risk Management and Lessons Learned**

3:30-5:00

**Lead:** *Warren Connley, GSFC*

#### **A Formal Lessons Learned Process as an Effective Countermeasure Against Known Risks**

3:30-4:00

*David Oberhettinger*

*Office of the Chief Engineer, JPL*

#### **Continuous Risk Management Maturity Assessment**

4:00-4:30

*William Powell*

*Reliability & Quality Assurance, MSFC*

#### **Reducing Mission Risk Through Anomaly Data Management and Knowledge Management**

4:30-5:00

*Warren Connley, Ed Rogers, Mike Rackley*

*Office of Mission Success, GSFC*

### **Session E:** *Room Q*

#### **Methods & Metrics for Reducing Risk**

3:30-5:00

**Lead:** *Pedro Curiel, JSC*

#### **Supplier Risk Management Assessment Results**

3:30-4:00

*Philip Montag*

*Program Manager, Honeywell TSI*

#### **Update - Risk Management Process Metrics: Measuring Effectiveness of Risk Management**

4:00-4:30

*Jeevan Perera, PhD/JD*

*Risk Manager, Crew Exploration Vehicle, JSC*

*Ray Williams, Software Engineering Institute*

*Carnegie Mellon University*

#### **Applied Lessons Learned on ARM Implementation for CEV**

4:30-5:00

*Pedro Curiel*

*CEV Risk Management Project Office, JSC*



**Session F: Rooms R & S**  
**Innovations in Risk Management**  
**Lead: Lawrence Davis, DFRC**

3:30-5:00

**Risk-Informed Inspection of Nuclear Power Plants**  
*Jerry H. Phillips, PE, PhD*  
*Consulting Engineer*  
*Risk, Reliability & NRC Programs Department*  
*Idaho National Laboratory*

3:30-4:15

**Lessons Learned from the X-31 Project**  
*Lawrence Davis*  
*SMA Director, DFRC*

4:15-5:00

**Risk Management Demonstrations** – Continually During December 6-8  
Coronado Ballroom K

**Active Risk Manager (ARM): NASA Applications**  
*Karl Pringle & Lita Cuen Strategic Thought LLP*

**Continuous Risk Management (CRM)**  
*Charlie Cockrell, Risk Management Corporation*

**Integrated Risk Management Application (IRMA)**  
*Jeevan Perera, PhD/JD, JSC*  
*Scott Field, Futron*

**Defect Detection and Prevention**  
*Martin Feather, PhD, JPL*

**Process Based Mission Assurance (PBMA)**  
*Jennifer Jones, Alphaport, GRC*

**Quantitative Risk Assessment System (QRAS)**  
*Vince Elias, Regional Sales Manager, Item Software*

**Systems Analysis Programs for Hands-on Integrated Reliability Evaluations (Saphire)**  
*Ted Wood, Idaho National Engineering and Environmental Laboratory*

**Galileo: Software Tool for Dynamic Fault Tree Analysis**  
*Leila Meshkat, PhD, JPL*

**Corporate Exhibits** – Continually During December 6-8  
Coronado Ballroom K

## **NASA Sponsors**

Office of Safety and Mission Assurance, NASA HQ  
Exploration Systems Mission Directorate, NASA HQ  
Office of the Chief Engineer, NASA ARC

## **RMC VI Planning Team**

### **Executive Team**

Chair	Ronald Moyer, NASA HQ/OSMA
Co-Chair	Robert Navarro, Risk Management Corp.
Associate Chair	Alexis Flippen, Risk Management Corp.
Management Advisor	John Tinsley, NASA HQ/OSMA

### **Special Leads**

Advertising Chair	Jeevan Perera, JSC/CEV
Exhibitor Chair	Michael Lutomski, JSC/ISS
Logistics Lead	Ila Pearl, OAI
A/V Technical Advisor	John Branard KSC/SMO

### **Members**

Anngienetta Johnson	NASA HQ/Office of Education
Dave Lengyel	NASA HQ/ESMD
James Rose	JPL/OSMS
Bob Wingard	Risk Management Corp.

*Disney's Coronado Springs Resort  
Lake Buena Vista, FL*